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THE GRAZING INDUSTRY OF THE BLUEGRASS REGION.

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INTRODUCTION.

Grazing bluegrass[1] with horses, mules, cattle, sheep, or hogs is the leading agricultural industry of southwestern Virginia, the adjoining sections of West Virginia and Tennessee, the northwest-central portion of West Virginia, and a large area of central and western Kentucky. For the sake of convenience, as well as to emphasize the importance of bluegrass in that area, this section of country is referred to in this bulletin as the "bluegrass region," a term which is often thus applied. (Fig. 1.)

While pastures consisting in larger or smaller part of bluegrass cover about one-fourth of the improved farm land of the northern part of the Mississippi Valley and eastward to the Atlantic coast, the farm practice in utilizing these pastures over the greater part of that area differs considerably from that of the sections above mentioned. Finishing beef cattle on grass, without grain, is not popular through most of the corn belt. Buyers usually discriminate against grass-fed stock; so while cattle may graze the pastures during the summer, they are either fed grain while on grass or are finished during the winter on grain. In the bluegrass region the cattle are finished on grass alone. Some farmers in this region feed sufficient grain during the winter to keep the 2 and 3 year old cattle gaining in flesh and graze them until

[1] *Poa pratensis.*

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July, when they are marketed. The most common practice is to winter the cattle as cheaply as possible and market them in the succeeding fall, when the grass begins to fail. That the quality of these steers is good is attested by the fact that many thousands of them have been exported. (Fig. 2.)

With the exception of central Kentucky, most of the bluegrass lands are unsuited to general-crop farming. They are often too rocky or too steep to be plowed; yet these grazing lands sell readily for $75 to $150 an acre. (Fig. 3.)

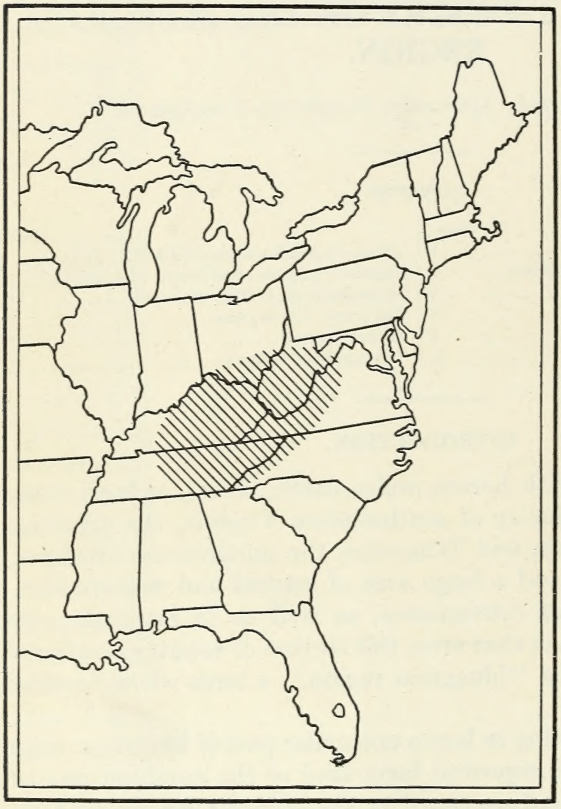

FIG. 1.—Outline map of the eastern United States, showing by shaded lines the region where bluegrass pastures predominate.

The mildness of the winters in this section, which allows grazing through most of the year and thus reduces the cost of wintering, is perhaps the principal reason why grazing is a more important industry here than in the regions farther north where blue grass is equally well adapted.

There is very little bluegrass land for sale, and when an estate is put on the market it is usually purchased by citizens of the same community. A well-balanced farm in the bluegrass region consists of enough tillable land to give a living to a family and produce sufficient forage to winter as many animals as can be pastured on the remainder of the farm. The grazing farms usually range from 300 acres upward. There appears to be no limit to the area of grazing land which a good business man can manage. There are many farms of several thousand acres.

THE DIFFERENT GRADES OF BLUEGRASS PASTURES.

There appear to be marked differences in the fat-producing qualities of bluegrass, depending apparently on the character of the soil on which it is grown. Practically all of the grass-fed export cattle are

produced on the limestone clays. Other soils may produce luxuriant grass, but the cattle fail to finish properly; they may do all right until they are 2 years old, when they are usually sold to the farmers who have limestone pastures.

Ellett[1] has shown that there is a wide variation in the protein content of Kentucky bluegrass grown in different localities. The protein in the water-free material ranges from 10.22 to 19.98 per cent. It is interesting to note that the grasses analyzing the highest in pro-

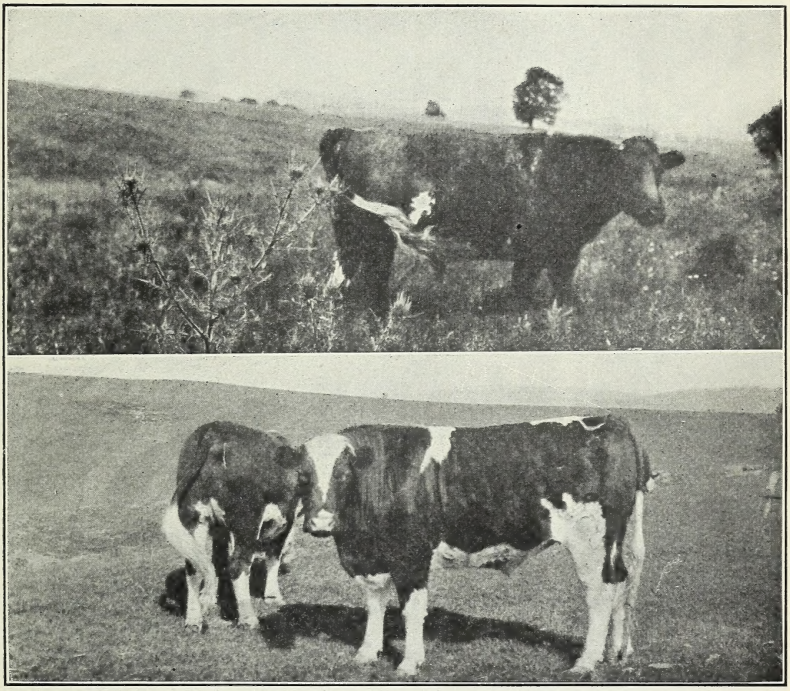

FIG. 2.—Steers grazing in the bluegrass region. Many thousands of such steers intended for export are finished on grass.

tein were grown in localities well known for the excellence of the grass-fattened cattle produced.

EFFECT OF WINTER GRAZING ON THE SOD.

There is no question that it is more economical to winter cattle which have free range over a pasture in the bluegrass region than to feed them in small yards. It requires an abundance of grass at all times to produce 350 to 400 pounds of gain on a steer between May 1 and October 1, and there should be considerable grass left when the cattle are sold. This is utilized by the newly purchased stockers.

[1] Ellett, W. B. The bluegrass of southwest Virginia. Va. Agr. Exp. Sta. Bul. 180, p. 89-96. 1909.

Some graziers save fields of bluegrass especially for winter grazing. The consensus of opinion is that this winter grazing does no harm, although many prefer to keep the stock off the pastures for a few weeks when the grass is beginning to grow in the spring.

Feeding hay or corn fodder on the poorest spots of a pasture is a very effective means of improving the stand of grass. (Fig. 4.) An objection often made to the use of a silo is that it necessitates the

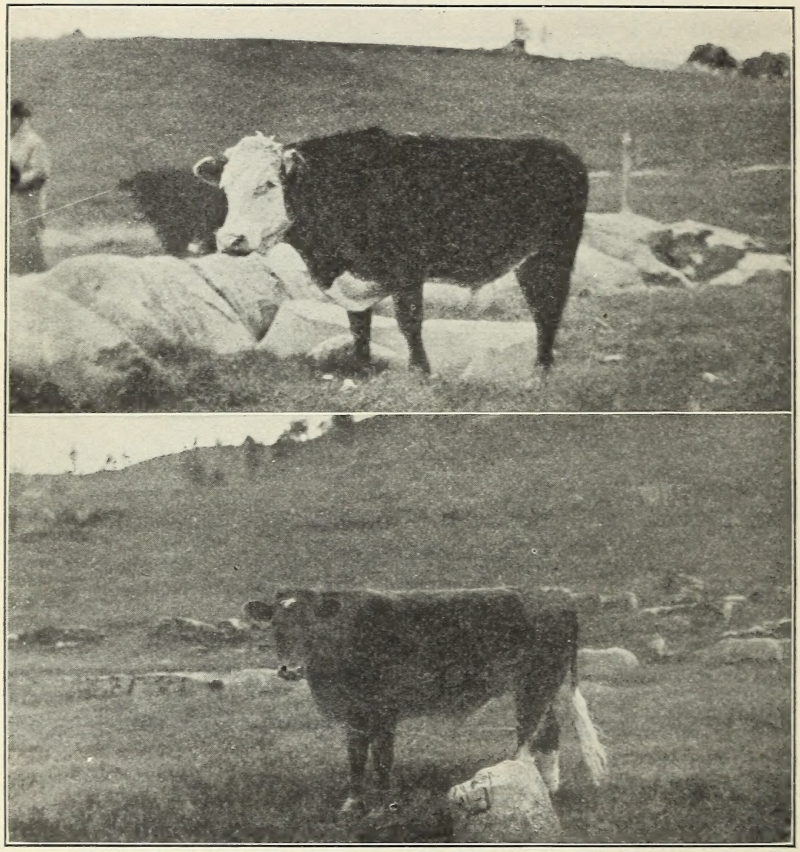

FIG. 3.—Fields too steep and rocky to be plowed, but which make excellent pastures.

extra expense of saving and hauling manure to the pasture fields when the quality of the sod is to be maintained.

It has been shown by the Virginia Agricultural Experiment Station[1] that fairly close grazing will keep a bluegrass sod in better condition than light grazing. The latter practice allows the grass and weeds an opportunity to seed. Cleaning up a field at the close of the grazing period seems to have a similar effect. The trampling of the field by

[1] Carrier, Lyman, and Oakley, R. A. The management of bluegrass pastures. Va. Agr. Exp. Sta. Bul. 204, 18 p., 8 fig. 1914.

stock, unless the land is so wet that it cuts up badly, is also beneficial. The soil of an old turf tends to become too loose. In an investigation carried on in England[1] with a view to discover a method of eradicating moss from old pasture fields, it was found that rolling was the most effective means of overcoming the trouble.

KINDS OF LIVE STOCK RAISED.

Considerable numbers of horses, mules, hogs, and sheep are raised throughout the bluegrass region, but cattle predominate and are here mainly considered. In order to graze profitably, the cattle must be well bred. One of the most serious drawbacks to the grazing industry is the difficulty of obtaining well-bred young cattle. The three leading beef breeds (Shorthorn, Angus, and Hereford) and their crosses

FIG. 4.—Steers which have been fed corn fodder in a pasture. Feeding fodder or hay is an effective means of improving poor spots in a stand of grass.

and grades are well represented, with the Shorthorn breed very much in the majority. Scrub stock will not produce the weight and finish that is required in a steer for export. A good beef calf dropped in the spring should weigh from 350 to 450 pounds the first fall. Twelve months later, as a yearling, he should weigh 700 to 750 pounds; as a 2-year-old he should weigh 1,050 to 1,150 pounds. A steer that will not approximate these weights is marketed for home consumption or kept until he is 4 years old.

WINTERING THE STEERS.

The common practice throughout the bluegrass region is to buy young cattle, commonly spoken of as stockers, in the fall. These are usually kept but one year, although some farmers buy yearlings and

[1] Eradication of moss in pastures. *In* Jour. Bd. Agr. [London], v. 7, 1, p. 39–40. 1900.

keep them two seasons. The financial success of grazing steers depends on (1) the purchase and selling prices, (2) the cost of wintering, and (3) the gains in weight. The yearly gain per steer on good grass is approximately 350 to 400 pounds. This at present prices represents but $28 to $32 for the year's keep if the buying and selling prices are the same. With the buying price 1 cent a pound below the selling price, $7 to $11 may be added to the above amounts, depending on whether the steers are yearlings or 2-year-olds. It is difficult to figure any profits in the business unless there is at least 1 cent a pound margin in favor of the selling over the cost price to offset the expense of wintering. Even with that margin, the strictest economy must be observed in wintering or there will be nothing left to the credit of the pastures. During recent years there has

FIG. 5.—Two-year-old steers which were wintered on straw, a little corn fodder, and hay.

been little difference between the price for stockers and that for fat cattle. There have also been fewer live cattle exported, so there has not been the advanced price for extra large cattle that formerly prevailed.

The methods of feeding the steers during the winter vary considerably in different localities of the bluegrass region. Nearly all of the graziers let the stock run on the pastures during the winter. Feeding begins in December or January, depending on the season, and continues until the middle of April or the first of May. Forage grown on the farm usually forms the entire ration. In some localities corn fodder, consisting of the unshucked crop, is fed, along with some straw and a little hay. (Figs. 5 and 6.) In other places the farmers shuck the corn and feed the stover, with straw or hay. Usually a little grain is added to the latter ration if the steers become too thin.

The silo is being used more than formerly. (Fig. 7.) The advantages of feeding silage over the old methods of dry feeding are that (1) it avoids the necessity of hauling from the cornfields during wet weather, (2) it enables more stock to be kept on the same acreage of corn, (3) it keeps the animals in better condition, and (4) it clears the entire field early for seeding to wheat. It has often been asserted by experienced graziers that cattle fed silage during the winter do not gain as rapidly on grass as those which were dry fed. Whether this opinion is formed from observation of the gains made the first month or two of the grazing period or from final weights in the fall has never been settled. The evidence given by farmers on this point is very contradictory. With the usual methods of feeding, silage-fed steers

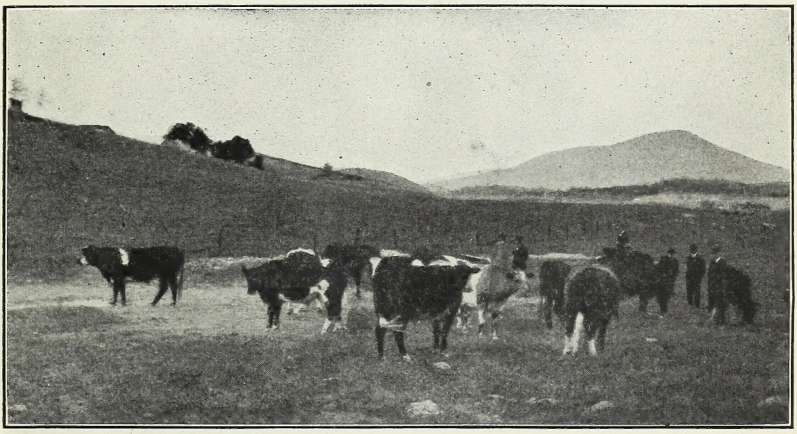

FIG. 6.—Steers like those shown in figure 4 in the condition in which they should appear after a season's grazing.

will weigh more in the spring than they did the previous fall and of course will not make equal gains with the thinner dry-fed cattle when first turned on grass. That more stock can be kept on the same acreage of corn put in a silo than would be possible were the corn allowed to stand in the shock in the field until used is admitted by practically every grazier who has tried both methods. Some claim that twice as many stock can be kept when a silo is used, but the estimate of most farmers is $1\frac{1}{2}$ times the number kept by dry feeding. This is a very important consideration, especially in the mountain sections, where there are sometimes insufficient tillable areas to produce forage to winter the stock which the pastures will carry during the summer. The silo might obviate the necessity of keeping a bluegrass field ungrazed during the summer for winter feed. (Fig. 8.)

GETTING A SOD.

Very little bluegrass has been sown in any of this region except in central Kentucky, where pastures are often plowed and the field cropped for a few years. The customary procedure is to clear additions to the pasture fields and allow the bluegrass to come in itself. (Fig. 9.) It usually takes three or four years by this method to get a fairly good stand of grass. If this is grazed properly, the quality of

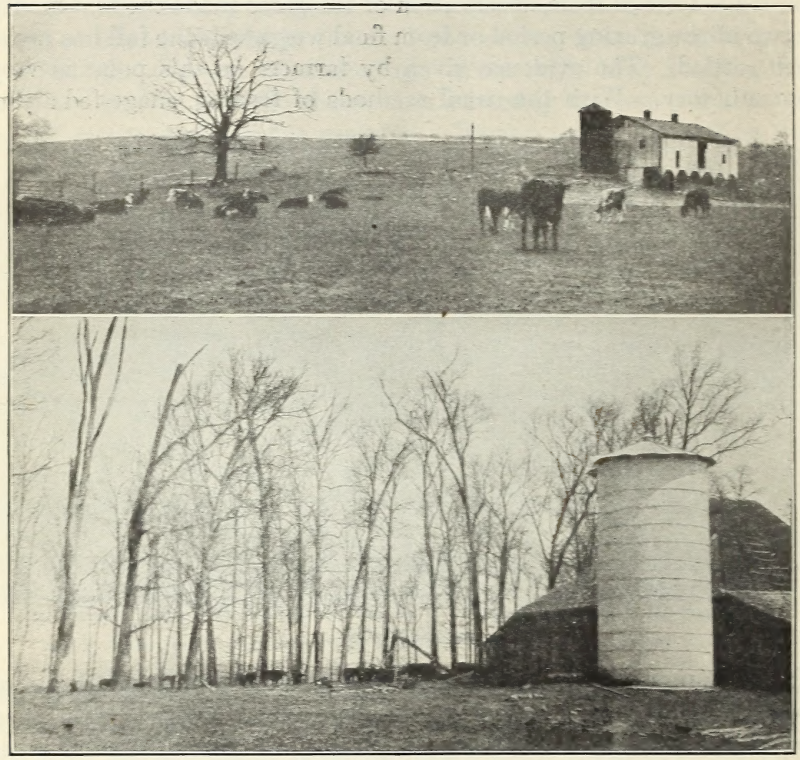

FIG. 7.—Silos used for feeding steers during the winter. Silage is being used more generally for this purpose, because more steers can be kept with the same yield of corn ensiled than if fed dry.

the sod will gradually improve for many years. Where the land is level enough to plow and prepare a seed bed, it is possible to permit much more grazing the first two or three years and to get a permanent sod more quickly by seeding a mixture of grasses, such as orchard grass, redtop, red or alsike clover, tall oat-grass, and timothy, along with the bluegrass. Bluegrass and white clover will eventually crowd out most of the other grasses, although orchard grass will persist for many years, thereby adding to the early spring and late fall grazing.

VALUE OF A PASTURE WHEN GRAZED WITH CATTLE.

The grazing on most farms is so intimately connected with other farm operations that it is extremely difficult to separate the returns and say just how much should be credited to the pasture fields. It has

FIG. 8.—A field of grass which is being kept for winter grazing.

been the custom in most farm-economic studies to assign an arbitrary value to the pastures, based on the prevailing prices paid for pasturing stock by the month. There are many fields in the bluegrass region

FIG. 9.—A pasture on cleared woodland. All trees should be cut or deadened and the brush cut and burned.

which are grazed by approximately the same number of cattle every year. As these cattle are purchased one fall by weight and sold the next fall in the same manner, it is possible to get definite figures as to

the yearly gains produced. From this total gain must be deducted the cost of wintering, in order to find the net returns for the pasture. The data secured from a number of farmers in Virginia, West Virginia, and Kentucky are given in Table I. The cost of wintering is based on estimates of the forage fed, which are as accurate as it is possible to obtain from farmers who, as a rule, feed unweighed and unmeasured forage and grain. These pasture fields were among the best in the localities visited (fig. 10) and do not at all represent average conditions for any large area. It does not seem possible to add anything to our knowledge of the value of pastures by averaging with these good grazing lands steep, wooded mountain sides or fields two-thirds of the surface of which is covered with rock.

The values assigned in Table I are 7 cents a pound as the purchase price of stockers, 8 cents as the selling price, $4 a ton for silage, 60 cents a bushel for corn, $12 a ton for hay, $6 a ton for corn stover, and $4 a ton for straw. It is thought that these represent fair average farm values.

TABLE I.—*Results of grazing on 22 bluegrass pastures, consisting of 4,237 acres, with 1,328 head of cattle.*

Pasture.			Average data per steer.							Feed during winter.				Cost of wintering.		
No.	Area.	Number of steers.	Weight on Oct. 1 (before grazing).	Gain in 1 year.	Yearly gain per acre.	Acreage of pasture.	Price per acre of pasture at the given rate per pound.		Yearly returns per acre.	Corn.	Hay.	Stover.	Straw.	Per steer.	Per acre of pasture.	Yearly returns per acre of pasture.
							Stockers, at 7 cents.	Selling at 8 cents.								
	Acres.		*Lbs.*	*Lbs.*	*Lbs.*					*Bu.*	*Tons.*	*Tons.*	*Tons.*			
1	90	50	1,135	400	222	1.80	$44.14	$68.22	$24.08	400	44	22	.....	$18.00	$10.00	$14.08
2	200	50	1,100	400	100	4.00	19.25	30.00	10.75	400	44	22	.....	18.00	4.50	6.25
3	175	45	1,060	422	108	3.88	19.08	30.49	11.41	360	40	20	.....	18.13	4.66	6.75
4	220	50	1,000	522	119	4.40	15.99	27.67	11.68	.....	125	.....	.....	30.00	6.82	4.46
5	68	20	1,016	390	115	3.40	20.92	33.08	12.16	.....	.....	24	12½	9.70	2.85	9.31
6	65	20	700	375	115	3.25	15.23	26.46	11.23	.....	4	15	10	8.90	2.74	8.49
7	70	35	750	350	175	2.00	26.25	44.00	17.75	.....	35	.....	.....	12.00	6.00	11.75
8	103	30	600	350	102	3.43	12.23	22.13	9.90	.....	.....	32	16	8.53	2.48	7.42
9	600	200	650	300	100	3.00	15.17	25.34	10.17	.....	.....	200	100	8.00	2.66	7.51
10	90	20	900	500	111	4.50	14.00	24.89	10.89	100	5	20	.....	12.00	2.66	8.23
11	80	22	777	350	96	3.63	14.92	24.75	9.83	110	.....	30	25	15.73	4.33	5.50
12	265	60	850	300	68	4.41	13.47	20.83	7.36	.....	.....	60	35	8.33	1.88	5.48
13	350	150	650	350	150	2.33	19.30	34.29	14.99	.....	30	110	75	8.80	3.77	11.22
14	50	19	750	300	114	2.63	19.75	31.92	12.17	.....	.....	20	9	8.21	3.12	9.05
15	315	90	850	408	117	3.50	17.32	28.76	11.44	.....	[1]65	80	40	10.00	2.85	8.59
16	70	24	1,100	350	120	2.92	26.40	39.77	13.37	192	.....	24	.....	10.80	3.69	9.68
17	775	240	950	425	132	3.23	20.59	34.06	13.47	.....	.....	190	110	6.58	2.04	11.43
18	225	75	1,150	400	133	3.00	26.83	41.33	14.50	1,125	35	50	15	19.40	6.47	8.03
19	100	18	1,050	400	72	5.55	13.23	20.88	7.65	675	.....	25	.....	30.83	5.55	2.10
20	50	20	450	300	120	2.50	12.60	24.00	11.40	.....	.....	15	15	7.50	3.00	8.40
21	180	60	980	520	173	3.00	22.87	40.00	17.13	1,350	30	60	.....	25.50	8.50	8.63
22	96	30	1,065	450	141	3.20	23.30	37.87	14.57	.....	[1]80	.....	9	11.87	3.71	10.86
Average..	193	60.4	.....	386	121	3.19	19.00	31.41	12.40	.....	.....	.....	.....	12.13	3.80	8.60

[1] Silage (tons).

It will be seen from the data in Table I that the returns varied from $2.10 per acre for the lowest to $14.08 for the highest. The average net returns, after allowing a good price for the roughage on the farm, are $8.60 per acre of pasture. This $8.60 must pay the taxes, insurance, fencing, and labor of caring for the pastures and stock. The labor bill is small, and so are the other items; but after these are paid there is not much left as interest on the investment. At the present prevailing prices of land the average bluegrass farmer does not make over 3 or 4 per cent on his investment. The average rental price per acre for pasture land in this region is $3 an acre for fairly good land to $5 an acre for the best. It is a safe, attractive business to men with considerable capital.

FIG. 10.—One of the best producing pastures in the bluegrass region.

VALUE OF A PASTURE WHEN GRAZED WITH SHEEP.

Sheep grazing is next in importance to cattle grazing over most of the bluegrass region. While the total value of the horses and mules is greatly in excess of that of sheep, most of the former are kept for work purposes.

The income from the sheep is derived principally from the wool and lambs. Ewes that are too old for breeding purposes are also sold for mutton. The lambs are sold at about 5 months of age, when they should weigh about 80 pounds each.

The chief drawbacks to the sheep industry of the bluegrass region are dogs, internal parasites such as stomach worms, nodular disease, etc. Sheep raised in the higher mountain regions of West Virginia and Kentucky are less infested with stomach worms than those in the lower altitudes. On this account there is a considerable demand for breeding ewes that were raised at these higher places.

There is practically no loss from stomach worms before the lambs are 5 months of age. The greatest losses occur in the fall and winter before they are 1 year old. This loss is so great that in many places it is not practicable to raise any breeding ewes, and it also prevents keeping the pastures stocked to their full capacity. Frequent changes of the grazing lands or a larger grazing area for the same number of sheep are the best preventive measures for the trouble.

Table II gives the returns from pasturing sheep on a few fields. It is difficult to obtain definite data in regard to sheep, as few farmers keep them for an entire year without other stock on the same grazing field. The cost of wintering sheep is very low. They graze the pastures all winter and during the cold months are also allowed to graze any small grain, such as wheat or rye, that may be on the farm. Extra feeding must be done when the ground is covered with snow, and also at lambing time, to keep the ewes in good condition. The total outlay for wintering, besides what is obtained from the pastures, seldom exceeds $1 a head, and usually averages about 75 cents.

TABLE II.—*Pasturing sheep on six pastures in the bluegrass region.*

Pasture.						Returns.	
No.	Area.	Number of ewes.	Wool produced.	Number of lambs raised.	Weight of lambs.	Total (wool at 25 cents and lambs at 7 cents a pound).[1]	Per acre of pasture.
	Acres.		*Pounds.*		*Pounds.*		
1	30	22	92	34	2,720	$213.40	$7.11
2	450	200	825	210	15,700	1,305.25	2.90
3	220	200	800	300	24,000	1,880.00	8.55
4	19	20	88	31	2,325	184.75	9.72
5	50	112	560	132	9,900	833.00	12.66
6	210	180	810	250	20,000	1,602.50	7.63

[1] The prevailing price for lambs at the time these data were collected was considerably higher than that used in the table.

MAINTAINING THE FERTILITY OF THE SOIL.

There is no system of agriculture that maintains the fertility of the soil better than grazing, especially where the animals are kept continually on the pastures. Some of the best pastures in southwestern Virginia have been grazed for at least 100 years. Many of them have never been plowed. The difficulty in getting a good sod on land that has been cropped with grain for a few years has proved the wisdom of keeping the land permanently in grass. It must be borne in mind that there are striking differences in methods of grazing. Where beef cattle or sheep are grazed, all of the resulting manure is left on the pastures, and the land is further enriched if the animals are given additional feed during the winter. This is usually not the case on dairy farms, where the cattle spend much of the time in yards

or stables. It is often remarked that "the pastures are robbed to keep up the fertility of the plowed fields."

Perhaps one of the greatest sources of loss of fertility from pasture soils results from the poor location of the shade trees and brush. These should always be set on the higher portions of the field, and not along the banks of running streams, as so often is the case. (Fig. 11.) With good grass, the animals do not graze more than one-third of the

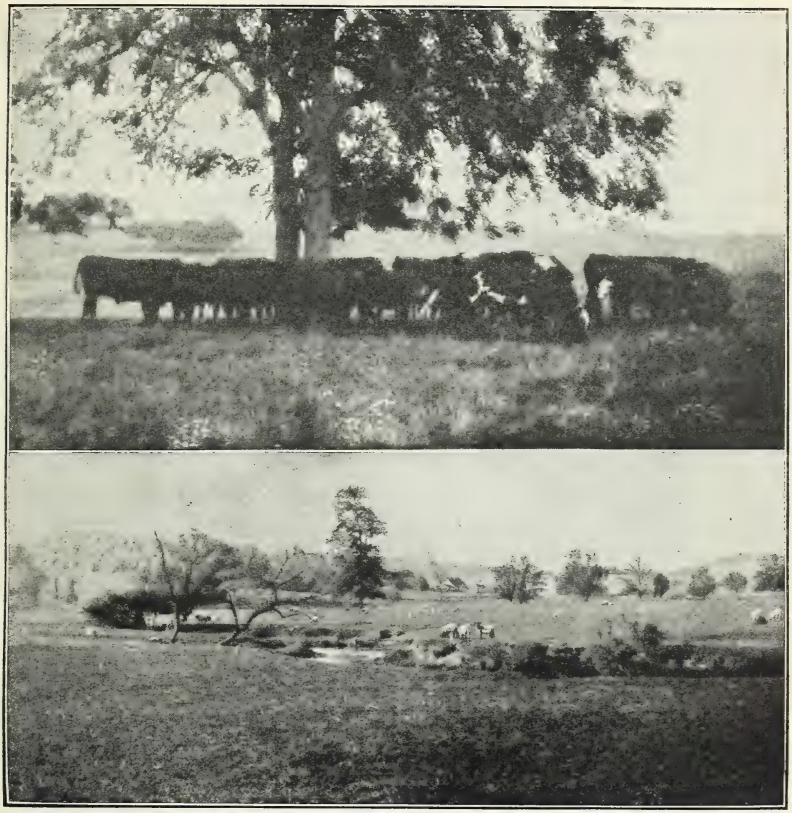

FIG. 11.—Cattle in the shade on an elevated part of a pasture (upper part). Trees should be located in such places and not in the valleys or along running streams, as shown in the lower illustration.

time; the rest of the time is spent lying down or standing in the shade fighting flies. Hence, much of the manure that is made does not get back directly on the land that produced the grass. If the manure produced while the animals are not grazing is deposited on the tops of the hills, its beneficial effects on the grass may be noted for several rods down the hillsides. It is easy to believe that if one-half to two-thirds of the manure is lost from pasture fields and none is added, the crops must gradually deteriorate.

Grazing is not sufficiently remunerative to justify the liberal use of commercial fertilizers, and very little is ever used in the bluegrass region on the pasture lands. In England it is not uncommon to apply basic slag at the rate of 1,000 pounds per acre to permanent grassland. Some farmers in the bluegrass region of Virginia are beginning to use lime and some form of phosphate on their pastures. This improves the stand of grass, but there are no data available to show whether the increase will cover the expense. In the absence of any experimental data, every farmer should experiment on his own fields in a small way. An application of 500 pounds of acid phosphate or bone meal to a half acre in an old pasture will soon show whether it is advisable to use fertilizers. If this quantity makes a marked improvement in the stand of grass, less would probably be beneficial.

FIG. 12.—A bluegrass pasture closely grazed.

THE PROPER RATE TO GRAZE.

Next in importance to maintaining the fertility of the soil in keeping a stand of grass is to stock a pasture properly. A field that is neither mown nor grazed will never form a desirable turf. On the other hand, overgrazing may destroy the plants. There is, however, very little overgrazing in the bluegrass region. If the fields are stocked too heavily, the animals make such poor gains that they are unsalable in the fall. There is greater danger of not keeping sufficient stock. Many of the fields have an appearance similar to neglected lawns. Closely clipped bluegrass on a fertile soil makes such a dense turf that most weeds have difficulty in invading it, but when it is allowed to go to seed the turf is weakened and more open places occur in it. It is impossible to lay down an absolute rule as to the number of animals to allow to the acre. What would be light grazing on one pasture may be overgrazing on another. The fields should be

stocked with a sufficient number of animals so that the grass will not have an opportunity to form seed. (Figs. 12 and 13.)

There is nothing lost by keeping the sod grazed reasonably close. While there is a greater bulk of forage produced when the grass is allowed to mature, the young grass has a much higher nutritive value,[1] which offsets the deficiency in yield.[2]

CARE OF PASTURES.

Very little labor is necessary to keep a good pasture in first-class condition. All loose stones and rubbish that are removed give that much more space for grass plants to grow. All brush or trees not

FIG. 13.—A bluegrass pasture lightly grazed.

needed for shade or other purposes should be cut or deadened by girdling.

In addition to the above suggestions, all tall-growing weeds should be mown at least once a year, preferably just before they form seed. It is a common practice in central Kentucky and in some other sections of the bluegrass region to mow the weeds. This is done with a mowing machine if the fields are sufficiently smooth; otherwise, by a man with a scythe. The difference in the appearance of fields in localities where weed mowing is practiced and where it is not is very striking. (Figs. 14 and 15.) Mowing will usually hold in check most of the common weeds, such as ragweed, oxeye daisy, thistles, and briars. A few sheep on cattle pastures have been found very efficient in keeping down many troublesome weeds.

[1] Ellett, W. B. The bluegrass of southwest Virginia. Va. Agr. Exp. Sta. Bul. 180, p. 89–96. 1909.

[2] Ellett, W. B., and Carrier, Lyman. The effect of frequent clipping on total yield and composition of grasses. *In* Jour. Amer. Soc. Agron., v. 7, no. 2, p. 85–87. 1915.

There has recently been introduced into southwestern Virginia a weed that gives promise of being more damaging to pastures than anything that has heretofore appeared. It is the field hawkweed (*Hieracium pratense*), a low-growing plant, somewhat resembling narrow-leaved plantain, but the stems and leaves are hairy. It spreads by underground stems and forms a dense mat, which crowds out most other plants. The flowers are bright yellow, borne on naked, upright stalks 8 to 20 inches high. This weed, along with other closely related species, has already damaged the pastures of New York and New England greatly. It could now be eradicated from

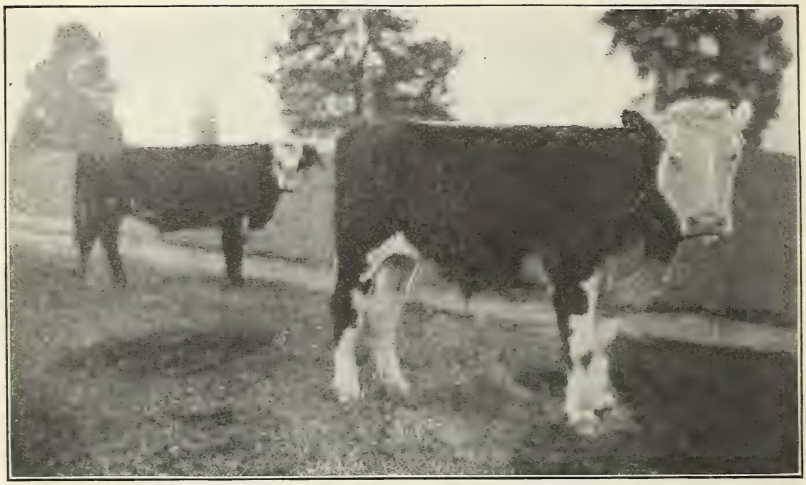

FIG. 14.—A pasture where weed mowing is practiced.

the bluegrass region if the farmers would attack it before it is distributed farther.

Hawkweed may be destroyed by chopping it out with a hoe or mattock. If this method is used, care should be exercised to get all the rootstocks in the upper inch or two of the soil and destroy them. Another method, which seems to be about the best that can be suggested at the present time, is to spray the plants on a clear day with a solution of ordinary salt. Three pounds of salt to 1 gallon of water is the proportion that has given the best results. Every patch treated should be inspected occasionally, as it may require two or three sprayings to entirely kill the hawkweed. If the weed is in small patches, which is the way it usually starts, a man equipped with a knapsack sprayer can cover a large area in a day. The spraying may be done at any time, but it is much easier to find the plant when it is in bloom. The showy yellow flowers are very conspicuous and may be seen and recognized for a considerable distance.

THE SUPPLY OF STOCKERS.

One of the chief difficulties of the grazing farmer in the bluegrass region is the lack of stockers. A few cows are kept on nearly every farm, but they produce but a small number of the calves that are needed. The reason that so few calves are raised on the bluegrass lands is because it is more profitable to graze a steer than to keep a cow an entire year just for her calf. Dairying does not fit in well in the agricultural scheme of the region. There is not sufficient level land in most localities to produce the forage necessary to keep a dairy herd in winter, and any admixture of dairy blood renders 1,500-pound 3-year-old steers impossible. A few graziers have tried buying yearling heifers, keeping them until they get one calf and then selling the mothers.

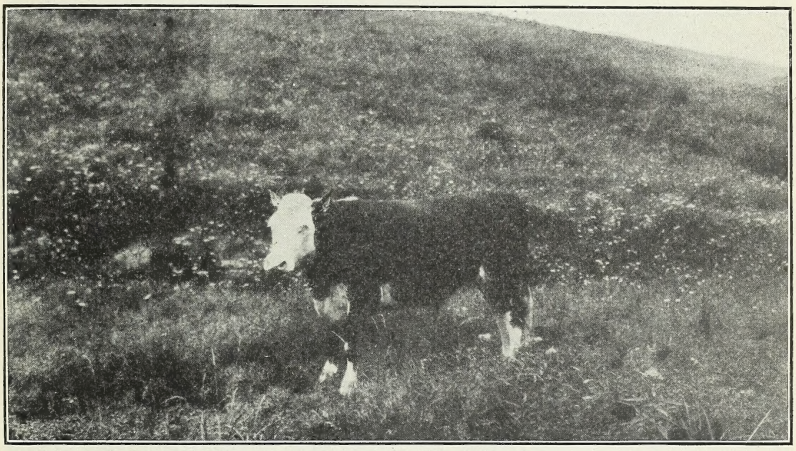

FIG. 15.—A pasture where weeds have not been mowed.

By this method they get not only the calf but an increase in the weight of the heifer. Some stockers are purchased in Chicago or Cincinnati, and a few come from Canada, but most of them are raised in the mountains of North Carolina, Tennessee, West Virginia, and eastern Kentucky by men who keep but a few cows, which range at will. These calves are purchased by local cattle dealers, who sell to the grazing farmers. The quality of the stock is maintained largely because the best graziers have distributed pure-bred bulls for free service wherever they are most needed. (Fig. 16.)

There should be a fairly profitable business on the cheaper lands of the Blue Ridge and in the Piedmont section in raising beef-bred calves for the bluegrass graziers. This will necessitate, however, the keeping of a much better grade of beef cattle than is usual. A good beef-bred calf will sell readily when 6 months old for $25 to $30. If

the dam is of a milking strain, considerable additional revenue may be obtained from the sale of dairy products after the calf is sold. This suggestion is made not that this type of farming is more profit-

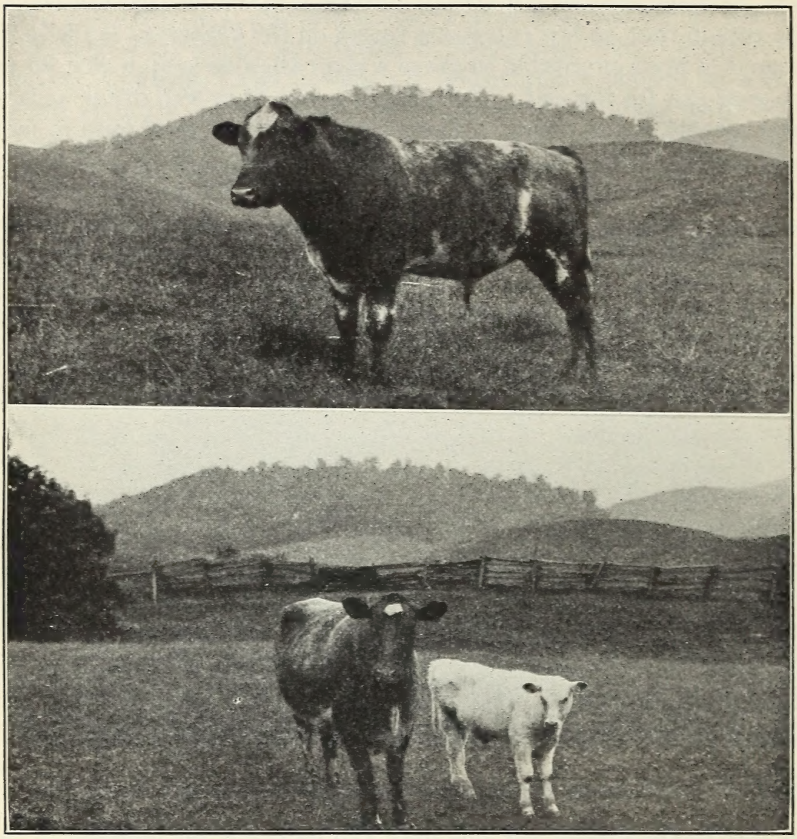

FIG. 16.—Polled Durham breeding stock in Tazewell County, Va. The quality of the grazing stock is maintained by the distribution of pure-bred bulls in the localities where the stockers are produced.

able than dairying, for it is not, but because it requires far less efficient labor than dairying and offers a means of utilizing a vast acreage of gullied hills which at present is waste land.

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